

IN THE CLAIMS

Please cancel claims 1-13 without prejudice or disclaimer, and substitute new claims 14-23 therefor as follows:

Claims 1-13 (Cancelled).

14. (New) An optical mode converter comprising:

a coupling waveguide having at an input end a first effective refractive index, the coupling waveguide comprising a tapered core of a substantially constant refractive index with a substantially square cross section at the input end having a size that tapers down moving away from the input end, the coupling waveguide having a cladding at least partially surrounding the tapered core; and

a receiving waveguide having a second effective refractive index at an output end, comprising a core of a substantially constant refractive index greater than the refractive index of the tapered core of the coupling waveguide, and a cladding at least partially surrounding the core, a side surface of the tapered core of the coupling waveguide being optically in contact, in a coupling portion thereof, with the receiving waveguide so as to allow optical coupling between the coupling waveguide and the receiving waveguide,

wherein the refractive index of the tapered core of the coupling waveguide is selected so that the first effective refractive index and the second effective refractive index differ from each other in absolute value less than 30% of the difference between the core refractive index and the effective refractive index of the receiving waveguide.

15. (New) The optical mode converter according to claim 14, wherein the refractive index of the tapered core is selected so that the first effective refractive index and the second effective refractive index differ from each other in absolute value less than 20% of the difference between the core refractive index and the effective refractive index of the receiving waveguide.

16. (New) The optical mode converter according to claim 15, wherein the refractive index of the tapered core is selected so that the first effective refractive index and the second effective refractive index differ from each other in absolute value less than 10% of the difference between the core refractive index and the effective refractive index of the receiving waveguide.

17. (New) The optical mode converter according to claim 16, wherein the refractive index of the tapered core is selected so that the first effective refractive index is substantially equal to the second effective refractive index.

18. (New) The optical mode converter according to claim 14, wherein the core of the receiving waveguide is tapered over at least a portion that is optically in contact with the coupling portion of the coupling waveguide.

19. (New) The optical mode converter according to claim 18, wherein the tapered core of the receiving waveguide reaches a width at an end of its coupling portion opposite to the input end, such that the effective refractive index of the receiving waveguide at said end of the coupling portion is approximately equal for two orthogonal polarization modes.

20. (New) An optical device comprising an optical mode converter according to claim 14, and a launching waveguide coupled to an input end of said coupling waveguide.

21. (New) The optical device according to claim 20, wherein said launching waveguide is a single mode optical fiber.

22. (New) A method for fabricating an optical tapered waveguide comprising the following steps:

growing a bottom cladding layer on a substance;
digging a wedge shape with a predetermined depth into said bottom cladding layer;
filling said wedge shape with an optical transmissive material having a refractive index so as to form a wedge;
growing a receiving core above said wedge in a way to optically contact at least partially said core layer with an upper surface of said wedge; and
growing a top cladding layer on said receiving core,
wherein the refractive index of the wedge is selected so that a first effective refractive index of a receiving waveguide having said wedge as a core and a second effective refractive index of a waveguide having said receiving core as a core differ from each other in absolute value less than 30% of the difference between the refractive index of said receiving core and the effective refractive index of the receiving waveguide.

23. (New) The method according to claim 22, further comprising the step of growing a ridge on the top of the top cladding layer.